

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): ~~Process~~ A process for obtaining a hydrocarbon fraction that can be used as a feedstock of an etherification unit and that contains a small amount of diene compounds, nitrogen-containing compounds and sulfur-containing compounds, starting from an initial hydrocarbon feedstock that comprises a mixture of olefins, dienes, and nitriles as well as sulfur-containing compounds, whereby said process comprises at least the following successive stages:

- a) a selective hydrogenation of said initial hydrocarbon feedstock in the presence of a catalyst that comprises at least one metal of group VIII and another metal of group VIB of the periodic table, under conditions sufficient to convert dienes to olefins and to convert nitrogen-containing compounds to nitrogen-containing compounds having a boiling point higher than 55°C, while not significantly hydrogenating said olefins,
- b) a fractionation by distillation of the effluents that are obtained from stage a) under conditions that make it possible to obtain at least two fractions including
 - ~~said a light~~ hydrocarbon fraction ~~and that comprises~~ comprising olefins and a small amount of diene compounds, nitrogen-containing compounds and sulfur-containing compounds, and
 - a heavy fraction that contains heavy hydrocarbons and the majority of the nitrogen-containing and sulfur-containing compounds obtained from the hydrogenation of stage a).

Claim 2 (Currently Amended): ~~Process~~ A process according to claim 1, in which the metal of group VIII is selected from the group that consists of platinum, palladium and nickel.

Claim 3 (Currently Amended): ~~Process~~ A process according to claim 2, in which

the catalyst contains 1% by weight to 20% by weight of nickel that is deposited on an inert substrate.

Claim 4 (Currently Amended): ~~Process~~ A process according to claim 1, in which the metal of group VIII is cobalt.

Claim 5 (Currently Amended): ~~Process~~ A process according to claim 1, in which said catalyst comprises 1% by weight to 20% by weight of metal of group VIB.

Claim 6 (Currently Amended): ~~Process~~ A process according to claim 1, in which the metal of group VIB is molybdenum or tungsten.

Claim 7 (Currently Amended): ~~Process~~ A process according to claim 1, in which said catalyst operates under a pressure of 0.4 to 5 MPa, at a temperature of 50 to 300°C with an hourly volumetric flow rate of the feedstock of 1 h⁻¹ to 12 h⁻¹.

Claim 8 (Currently Amended): ~~Process~~ A process according to claim 1, in which said hydrogenation is carried out in the presence of an amount of hydrogen that slightly exceeds the stoichiometric value that is necessary for hydrogenating all of the dienes that are present in the initial hydrocarbon feedstock.

Claim 9 (Currently Amended): ~~Process~~ A process according to claim 1, in which said hydrocarbon fraction has a ~~higher~~ final boiling point that is less than 100°C.

Claim 10 (Currently Amended): ~~Process~~ A process according to ~~claim 6~~ claim 9, in which said final boiling point is less than 60°C.

Claim 11 (New): A process according to claim 1, wherein the olefins separated in

step (b) into said light hydrocarbon fraction have primarily 4-5 carbon atoms.

Claim 12 (New): A process according to claim 1, wherein the diolefin content is reduced from several percent to less than 5000 ppm.

Claim 13 (New): A process according to claim 1, wherein the diolefin content is reduced from several percent to less than 2500 ppm.

Claim 14 (New): A process according to claim 1, wherein the diolefin content is reduced from several percent to less than 1500 ppm.

Claim 15 (New): A process according to claim 1, wherein said light hydrocarbon fraction contains less than 20 ppm of nitrogen.

Claim 16 (New): A process according to claim 1, wherein said light hydrocarbon fraction contains less than 5 ppm of nitrogen.

Claim 17 (New): A process according to claim 12, wherein said light hydrocarbon fraction contains less than 20 ppm of nitrogen.

Claim 18 (New): A process according to claim 14, wherein said light hydrocarbon fraction contains less than 20 ppm of nitrogen.

Claim 19 (New): A process according to claim 12, wherein said light hydrocarbon fraction contains less than 5 ppm of nitrogen.

Claim 20 (New): A process according to claim 14, wherein said light hydrocarbon fraction contains less than 5 ppm of nitrogen.